

WHAT IS CLAIMED IS:

1. A method for generating one or more computer-executable procedures,
comprising the steps of:

recording at least one trace of at least one instance of a procedure;

5 simultaneously performing an alignment and generalization of the at least one
trace; and

generating the one or more computer-executable procedures consistent with the
alignment and generalization.

10 2. The method of claim 1, wherein simultaneously performing an alignment
and generalization of the at least one trace further comprises the steps of:

computing all possible alignments and generalizations of the at least one trace;
and

selecting the alignment and the generalization from the all possible alignments
15 and generalizations that maximizes a goodness of alignment-generalization functional.

3. The method of claim 2, wherein selecting the alignment and the
generalization from the all possible alignments and generalizations that maximizes a
goodness of alignment-generalization functional comprises selecting the alignment and
20 the generalization from the all possible alignments and generalizations that maximizes a
goodness of alignment functional and a goodness of generalization functional.

4. The method of claim 3, wherein selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes a goodness of alignment functional and a goodness of generalization functional comprises selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes a goodness of alignment functional equal to a sum of steps correctly predicted by a procedure model.

5. The method of claim 3, wherein selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes a goodness of alignment functional and a goodness of generalization functional comprises selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes a goodness of generalization functional that is equal to a sum of steps correctly generalized by a procedure model.

6. The method of claim 2, wherein selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes a goodness of alignment-generalization functional comprises selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes a monotonically increasing function of a goodness of alignment functional and a goodness of generalization functional.

7. The method of claim 6, wherein selecting the alignment and the generalization from the all possible alignments and generalizations that maximizes a monotonically increasing function of a goodness of alignment functional and a goodness of generalization functional comprises selecting the alignment and the generalization from
5 the all possible alignments and generalizations that maximizes a linearly increasing function of a goodness of alignment functional and a goodness of generalization functional.

8. The method of claim 1, wherein simultaneously performing an alignment
10 and generalization of the at least one trace further comprises selecting an alignment and generalization by maximizing a goodness of alignment-generalization functional using an optimization technique.

9. The method of claim 8, wherein selecting an alignment and generalization
15 by maximizing a goodness of alignment-generalization functional using an optimization technique comprises selecting an alignment by maximizing a goodness of alignment-generalization functional using an iterative optimization technique.

10. The method of claim 9, wherein selecting an alignment by maximizing a
20 goodness of alignment-generalization functional using an iterative optimization technique comprises selecting an alignment by maximizing a goodness of alignment-generalization functional using a gradient-descent technique.

11. The method of claim 1, wherein simultaneously performing an alignment and generalization of the at least one trace further comprises the steps of:

computing an initial alignment and generalization of the at least one trace;

generating a procedure model of the initial alignment; and

5 computing a best alignment and generalization of the procedure model.

12. The method of claim 11, further comprising the step of:

repeating the steps of determining the initial alignment, generating the procedure model, and determining the best alignment until a local optimum is detected.

13. The method of claim 11, wherein generating a procedure model of the initial alignment comprises generating a Hidden Markov Model of the initial alignment.

14. The method of claim 13, wherein generating a Hidden Markov Model of the initial alignment comprises generating an Input/Output Hidden Markov Model of the initial alignment.

15. The method of claim 1, wherein simultaneously performing an alignment and generalization of the at least one trace further comprises the steps of:

20 determining an initial alignment and generalization of the at least one trace;

generating a transition model and an action model of the initial alignment and
generalization; and

determining a best alignment of the transition model and the action model.

5 16. The method of claim 15, wherein further comprising the step of:

 repeating the steps of determining the initial alignment, generating the transition
model and the action model, and determining the best alignment until a convergence is
detected.

10 17. The method of claim 15, wherein generating a transition model and an
action model of the initial alignment and generalization comprises generating a transition
model for at least one node and an action model for the at least one node.

 18. A machine-readable medium having instructions stored thereon for
15 execution by a processor to perform a method for generating one or more
computer-executable procedures, comprising the steps of:

 recording at least one trace of at least one instance of a procedure;

 simultaneously performing an alignment and generalization of the at least one
trace; and

20 generating the one or more computer-executable procedures consistent with the
alignment and generalization.

19. A system for generating one or more computer-executable procedures,
comprising:

means for recording at least one trace of at least one instance of a procedure;

means for simultaneously performing an alignment and generalization of the at

5 least one trace; and

means for generating the one or more computer-executable procedures consistent
with the alignment and generalization.